THE STATUS OF PHYSICAL THERAPEUTICS IN THE MEDICAL COLLEGE CURRICULUM OF TODAY*

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The brevity of the time assigned and devoted to the study of nonmedical therapeutic agents in the present medical college curriculum was very forcibly brought to my notice when I was asked by the faculty of a Class A school to present in sixteen hours this entire field with the exception of electrotherapeutics. The results of the attempt were far from satisfactory to the students and to myself. It was possible in this space of time only to make brief mention of the physiologic effects and therapeutic uses of such measures; and there was no time for demonstrations and no opportunity for the students to become familiar with the technic which is so essential to the proper application of these therapeutic agents.

It occurred to me that it would be interesting to know what attention is given to these subjects in the medical schools of the United States, and the material gathered in the course of my subsequent investigation forms the basis of this paper. This information is presented with the earnest desire to encourage a more systematic teaching of these subjects, so that every graduate in medicine on entering practice may be prepared to make scientific and effective use of physiologic therapeutics. My information was obtained by sending to each of the medical colleges listed and classified by this Association an inquiry as to the number of hours devoted to the presentation of the subjects of hydrotherapeutics, electrotherapeutics, mechanotherapeutics, massage, medical gymnastics and dietetics. Replies were received from fifty-seven schools, forty-two of which are listed in Class A, nine in Class B, and five in Class C. The replies to my inquiry indicate a decided interest in the subject, and many express regret that time and suitably equipped laboratories are not available for proper presentation of the subjects.

In 1908 the American Medical Association, through its Council on Medical Education, prepared an outline for a model medical curriculum. Their report, which was issued in September, 1909, represented the work of a committee of 100 of the leading medical educators of the United States and Canada. In their schedule of hours devoted to the different subjects of the medical curriculum, an allowance of sixteen hours in the third year was made for nonpharmaceutical therapeutics, and in the fourth year fifteen hours were devoted to electrodiagnosis and therapeutics. There was no other definite time allotted to this class of therapeutic agents. Under the head of nonpharmaceutical therapeutics were classed hydrotherapy, climatology, dietetics, electrotherapeutics, psychotherapy and other physical and physiologic measures. The members of the committee considered this sufficient time for the theoretical discussion and demonstration of the above named subjects. Some members of the committee felt that more time should be devoted to this class of therapeutics, but the limited total number of hours at their disposal determined their final recommendation.

The same committee advised that 165 hours be devoted to pharmacology and toxicology. It is not my intention to criticize the committee's report, but I am certain that the time allotted to nonpharmaceutical therapeutics is entirely insufficient to give the student a degree of proficiency in his use of these methods equal to that which he is supposed to acquire in the use of medicinal agents. I have referred to this model curriculum at this time in order that comparison may be made between the standard schedule thus established and the average schedule of the investigated subjects in operation in the medical schools.

In summarizing the collected information, I found that the average time devoted to the nonpharmaceutical subjects exclusive of psychotherapy was sixty-two hours, or about four times that recommended in the model curriculum. In all but two or three of these schools special work was being given in one or more of the subjects of this group. In seventeen of the schools a special course was devoted to hydrotherapy; eleven other schools gave a course in which hydrotherapy was combined with one other subject of the nonpharmaceutical group. Dietetics was considered in a special course by twenty-two schools, the average number of hours devoted to this subject being thirty. The majority of schools are giving special courses in electrotherapeutics, a few considering the subject only in connection with other courses, such as neurology. That electrotherapy has a definite place in therapeutics cannot be questioned; and it is unfortunate that because of a lack of satisfactory information it is still so much in the hands of the "irregular practitioner" that many physicians hesitate to use it, fearing criticism from the profession. In twenty-three schools giving a special course in this subject, an average of twenty-three hours is devoted to the subject.

Very few of the schools were able to demonstrate the proper technic of the physical measures because of a lack of suitable equipment. A few schools, through their hospital connections, were able to demonstrate such procedure before their students, but very few of them required such work on the part of the student individually as would be required in a practical course in pharmacology. A few schools still give the greater part of this work incidentally in connection with the courses in general therapeutics or in clinical medicine.

The objection to these subjects being presented in this way is that the student has not familiarized himself with the proper application of such measures, nor is he so drilled in their physiologic action as to allow him to make use of these measures with the same precision with which he would employ medicinal agents. Until it is possible to teach them as laboratory subjects where the different forms of apparatus necessary to the application of such treatment is available, it will be of no practical use to the practitioner unless he takes some special work to obtain that proficiency which will enable him to determine the proper application of such remedial measures to the condition before him. Where a personal opinion has been expressed by those in charge of the department of therapeutics, the opinion is quite universal that a sufficient amount of time is not at their disposal, nor have they the equipment for properly teaching the use of nonpharmaceutical measures. It is to be hoped that the time is not far distant when medical schools will have more satisfactory means of imparting information concerning these subjects, and in my opinion this edu-

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cation of the profession will very largely solve the problem of the irregular practitioner who attempts to commercialize an imperfect knowledge of these subjects to the great disadvantage of the patient.

As to the lack of time and proper facilities, the dean of one of the leading schools of the country expressed himself as follows:

We do not pretend that, as far as mechanical treatment is concerned, we are as efficient as we should like to be. The executive committee of the hospital has been attempting for some years to obtain endowment for a department of physical therapy, but so far we have been unsuccessful. We have the matter in mind, however, and meanwhile we are continually using many of the methods of physical therapy with the somewhat incomplete apparatus which is available to us.

Another answered as follows:

In reply to your recent letter would say that the status of physical therapeutics in this medical school is not at all satisfactory. Indeed, from my experience I would say that this form of therapeutics is very unsatisfactory in most all medical colleges and hospitals. In such work it is very difficult to differentiate between the honest, conscientious seeker for the truth, the therapeutic enthusiast who does not use critical methods of control for his work, and the unprincipled money-maker who uses such methods as a form of exploitation. Although I heartily approve of all forms of physical therapeutics, it seems wise to me, in the development of them, to proceed slowly. The only way to differentiate between the classes of workers above mentioned is, to my mind, the keeping of very careful records which may be critically analyzed as data by competent medical men, to have an adequate series of control cases, and to follow up the end-results of this form of work. It has been the tendency in most medical schools to discontinue special departments of therapeutics, the function of which has been taken over to a considerable degree by those responsible for the teaching of pharmacology and clinical medicine and the special branches.

The question has been raised by some as to the advisability of presenting the nonpharmaceutical subjects as individual courses, suggesting that they should be given consideration under the general head of therapeutics. I quite agree that this could be done, but unless the same careful attention is given the physiologic action and proper technic of the use of these measures, as is given to the use of medicinal preparations, the instruction will have been insufficient. The student must be given opportunity to obtain sufficient proficiency and information to know when such measures may be used with profit and to give definite directions as to how they should be used. It is as essential that this be done as that specific directions be given in regard to the proper dosage and frequency of administration of a drug. Would the physician be pardoned if he should direct the nurse on a case to administer the alkaloids or other potent drugs in any way she might think best? But this is just what is being done by many of the physicians who are attempting to make use of nonmedicinal agents. Undoubtedly, many patients are not only not benefited but are in many cases injured by such therapy.

The empiric use of hydrotherapeutic measures is fraught with grave danger in many organic diseases, and the same may be said with reference to the use of massage or other physical measures; but this should not condemn them as of no value. It is not desired to argue as to the beneficial effects of the nonmedicinal agents in disease. The fact that they have stood the test of time and are being used more and more in a

scientific way is sufficient proof of their value. That they have been used empirically and are today exploited by some in such a way as should be severely condemned is no more to their discredit than are the facts with reference to the "patent medicine" question. The opinion held by the profession with reference to the physiologic action and therapeutic value of the majority of the pharmacopoeial drugs has been completely changed as a result of information obtained by painstaking effort on the part of laboratory workers. When equal attention is directed to the other therapeutic measures, it will be found that in many situations they can be used to much greater advantage than the medicinal agents. Unless our profession is to be criticized as are those who refuse to acknowledge virtue in any line of treatment except that to which they are wedded, it will be necessary for us to give proper consideration to all valuable therapeutic measures, and in so doing we shall immeasurably increase our usefulness and have the confidence of the public to a much greater degree.

The one best qualified to prescribe the diet in diseased conditions should be the physician; but when he is ignorant of the simplest principles of dietetics and advises his patient "to eat whatever he likes, as much as he likes and whenever he likes," it is only to be expected that the patients will appeal to those who profess, under whatever name, to have sufficient knowledge of the subject to prescribe intelligently in specific conditions. Until within the past few years the subject of dietetics has not received attention in the medical curriculum as a specific subject; but, fortunately, conditions have now changed, and such a course is given in practically every school of the United States, and more time is devoted to it than was suggested by the committee on a model medical curriculum for the whole subject of nonpharmaceutical therapeutics, which comprised the subject of dietetics along with others. The work being done by Allen with reference to diabetes, the late researches as to the etiology of pellagra, and the study of anaphylactic phenomena after the ingestion of certain foods, and toxic conditions due to intestinal disturbances, with other considerations equally important, show the need of thorough instruction in this subject. It is not sufficient that the student hear the subject mentioned in a general way. He needs specific information. But we are told that the difficulty in accomplishing this is the lack of time. The curriculum is already overcrowded with apparently indispensable subjects. A possible solution of the matter might be found by those schools which require one or more years of college work for entrance by requiring that the premedical work shall have a specific relation to the regular medical course, and shall lessen the number of courses now crowded into the medical curriculum.

The modern hospital is very careful to install the best available equipment for the application of physical therapeutics, but unfortunately little use is made of it. This can in many cases be explained by the imperfect knowledge of the subject possessed by the medical staff. It is hardly to be expected that satisfactory use could be made of a therapeutic agent which the physician had never seen demonstrated and the physiologic action of which he had never observed. A complete pharmacy without a working knowledge of the drugs therein contained would be a comparable situation. Great effort is being made to determine exactly the physiologic actions of the drugs that are listed in the

pharmacopeia and that are being introduced in large number by chemical manufacturers; and certainly all due credit should be given the laudable efforts in this line. But of the hundreds of drugs that are at our service, how many are indispensable? The following quotation from a recent editorial¹ in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION relative to this subject is of interest in this connection:

Until very recently, we were compelled to acknowledge that little if any progress was being made in internal medicine so far as drug therapy was concerned. Everybody knows of the progress made in other branches—in bacteriology, in pathology, in biologic chemistry, in surgery, in etiology and in the application of technical methods to diagnosis. Recently, however, pharmacologic research and the application of scientific methods in the study of the physiologic action of drugs are resulting in definite, positive progress. An important lesson, incidentally learned through this scientific investigation, is the fallibility of the drug therapy described in textbooks. . . . Many drugs have been, and still are, vaunted in textbooks as valuable in a variety of conditions, whereas scientific investigation and controlled clinical observation have proved them to be totally worthless; others are proving to be of value in an extremely limited number of conditions. The sooner writers of textbooks realize this fact and enter into the spirit of the new era, the better for the public and for scientific medicine.

When an individual has learned by experience of the fallibility of drugs, he has not infrequently lost confidence in his physician and has been led to employ as his adviser some one professing to cure physical ills without resorting to drugs. The number of such individuals has become so large as to provide a considerable field for the drugless healers, and the influence of this class has been so great with our state legislatures that they have felt compelled to grant some form of recognition to these irregular practitioners. Because the medical profession in the past has ignored to so great an extent all other therapeutic measures than drugs, may it not be possible that the responsibility for the prosperity of osteopathy and similar therapies rests largely on their shoulders?

There is no doubt as to the value of suggestion in a large number of pathologic conditions; but because the regular physician has been imperfectly educated in psychology and has used it so little in his work, he has permitted large numbers to turn to Christian Science or New Thought for the relief of all their ills. And so neglect on the part of the profession to make proper use of physical therapeutic measures has made it possible for the irregular practitioner to recommend himself to the public through that measure of success which apparently attends his efforts in the application of these lines of treatment. That this condition of affairs is unfortunate is very apparent. The irregular practitioner, because of his imperfect education, is unable to make a careful and proper diagnosis, and this results in his attempting to use his particular method of treatment in cases where it is decidedly contraindicated and may cause needless sacrifice of human life. Instances of this are common knowledge.

The treatment of the chronic invalid in the future will be more and more institutional, and if successful, must depend on a system which will include the non-medicinal form of therapeutics to a large degree. The question of proper diet can no longer be left wholly in the hands of the hospital authorities. The physician will be expected to prescribe this in a specific way in

each case. The proper application of massage cannot safely be turned over to some one bearing the brand, "trained in Sweden," but should be directed and supervised by the physician. The value of passive exercises in the treatment of certain conditions is inestimable. Tonic effects may be more satisfactorily obtained by hydropathic treatments than by the prolonged use of any so-called tonic agent of the pharmacopeia; and in hospital practice where proper facilities are provided, the value of hydrotherapy in a wide range of cases should be more generally appreciated. Similar remarks might be made about other nonmedicinal therapeutic measures. The day is past when, in medical cases, the patients will submit without protest to being confined in hospitals and treated solely by drugs. Patients are coming more and more to avail themselves of massage, exercise, hydrotherapy, and to insist on having the advantage of such measures in conjunction with medicinal therapeutics and a prescribed diet.

One reply, received from the dean of one of the university medical schools, was as follows:

I would state that the course in therapeutics devotes itself rather more than half the time to subjects not related to the use of drugs, and the emphasis throughout is laid on attending first of all to conditions of living, nursing, dieting, securing of favorable mental attitude on the part of patients, prophylaxis, etc. . . . From time to time students make reports on such subjects as x-ray therapy. Amphitheater demonstrations of certain simple hydrotherapeutic treatments, such as the typhoid bath are given, but, owing to lack of facilities, most of the work in physical therapeutics is confined to discussions.

And so it is with the majority of schools. While recognizing the value of such measures, they find it impossible to present them properly, owing to lack of time and proper facilities. This, then, seems to be one crying need in our schools. While the time devoted to these subjects is far greater than suggested in the model curriculum, it is yet far from sufficient to present these subjects in such a thorough manner as to fit the student to use them in a practical way. The more serious lack of properly equipped laboratories makes it impossible to present them in a scientific way, with the result that these measures are often prescribed in an empiric way, and, under the circumstances, recommend themselves neither to the physician nor to his patient.

The day is past when the public is willing to be treated by medication solely. Today, intelligent patients expect that their physician will be able, in addition to making a correct diagnosis, to prescribe that form of treatment that will most readily restore them to health. They expect him to tell them the cause of the trouble and how they can avoid it in the future; how and what and how much they should eat, how they should bathe, and what exercises would be to their advantage. A knowledge of drugs only will not permit the physician to do this. Is it necessary that the patient be compelled to consult, in addition to his physician, a food expert and a gymnasium director to find out what to eat and how to exercise, or to consult an osteopath or a professional masseur to obtain the benefit from manual movements? It is high time that the physician be able to direct in all the activities having to do with the well-being of his patient, and that he so minister to all his physical needs that never again will the patient think of him as a dispenser of drugs only.

1. The Fallibility of Drug Therapy in Textbooks, editorial, THE JOURNAL A. M. A., May 27, 1916, p. 1708.

ABSTRACT OF DISCUSSION

DR. THOMAS F. REILLY, New York: Physical therapeutics is the one branch of medicine wherein those who become interested are exceedingly prone to run to extreme statements as to its therapeutic possibilities. No one denies that physical therapy has a place in the alleviation of symptoms and indirectly in the cure of disease; but it is by no means the panacea that its apostles would have us believe. Unless the curriculums of our medical schools are freed from some of the work necessary to successfully pass state board examinations, it is not possible to give more than a fraction of the time advocated in this paper to a study of these measures. Like the reader of the paper, each specialist cries out that the medical school does not go thoroughly enough into his particular specialty. After all, the medical school can furnish little more than the principles of medicine in the time allotted to study—the alphabet of the science, as it were. The words and sentences must be filled out in hospital practice. The application of the use of the physical measures as recommended are time consuming, and from an economic standpoint are not practical in everyday practice by the general practitioner himself, but must be done by nonprofessionals, just as the pharmacist must take up most of our preparations. Of course, the basic principles of such therapy must be taught. This applies with special emphasis to Roentgen-ray diagnosis and therapy, a specialty which must soon find a relatively large place in every curriculum.

DR. N. P. BARNES, Washington, D. C.: This condition might be ameliorated after the student has spent so much time in the laboratory by a little work in a gymnasium which should be connected with each college. I recommend to my students, especially those in the second year, finishing their anatomy, to go to a gymnasium to work out and study their muscles. Nearly every city supports one or more gymnasiums, which are always accessible to the properly minded medical student. I had a young man in my office who was very well developed on the right side, but not on the left, because he was a tennis player. I prescribed that he put his right arm in a sling and play with the left arm, and in the course of time he got some development on that side. We all prescribe massage and how many of us know anything about it? The student in the future should be able to direct this massage, and I feel that when I tell patients that they need massage that I like to supervise it because we get different results from different manipulations.

DR. WALTER E. SIMMONDS, Chicago: For the last two years I have been engaged in teaching this work. I have only sixteen hours for all the practical instruction in hydrotherapy, electrotherapy, phototherapy and mechanotherapy. A lecture course is given by the head of the department. He has worked for years to secure some kind of equipment for a laboratory in which to give this instruction, but was unable to secure an adequate appropriation for this purpose; all that could be obtained was \$75, and, of course, we could not procure a very complete equipment with this amount. I maintain that the same time should be given to laboratory instruction in physical therapeutics as is given to pharmacology. Our students have a two-hour period in pharmacology to one in nonpharmacological therapeutics. Dr. Reilly mentioned the difficulty of obtaining men trained in this branch. I see no reason for this. If you want a man in your hospital for Roentgen-ray work you send him to get this special training. Why should you not send a promising young physician for training in physical therapeutics? The superintendent of a large Chicago hospital told me that the reason their department for physical therapy was not more used was that the physicians who attended the hospital did not prescribe this form of therapeutics. Having obtained a man trained in this branch, and such men can be obtained if the salary is paid, an adequate department should be furnished him; do not handicap by less equipment than a second-rate bathhouse would have. Give him an equipment that would enable him to do the same kind of scientific work as is done in other branches of medicine. Men working along one particular line become enthusiasts, but with the close cooperation of those engaged in clinical work, as well as those teaching the fundamental sciences, you will find that he will do as good scientific work as in any other department. I protest against placing the nonpharmacological equipment

in the basement or other least desirable part of the college or hospital.

DR. B. FANTUS, Chicago: This paper brings out the important fact that we are properly teaching only one half of the therapeutics we should teach in our medical schools. When the practice of a hospital or of a successful physician is examined, it will be found that medicinal therapeutics constitutes only one half or less of treatment, and that the other half is made up of physical, psychic and dietetic measures; and this in spite of the fact that most of us never had adequate instruction in the measures. I believe the time has come and is here now, when it must be recognized that the doctor who knows nothing but drugs is as reprehensible as he who solely practices massage, electrotherapy, hydrotherapy, etc. I take issue with the idea brought out in the discussion that some of these measures are properly measures for specialists. They will never come to their own until every physician is competent to practice them. Take massage, for instance. Every doctor frequently meets cases that need massage; and, if he does not know how to apply it and in certain cases to teach the manipulations to the patient, the latter will generally not obtain the benefit of these manipulations at the time when they might do the most good. There are million of joints in the United States that have become crippled because of the lack of massage at the time when it was needed. Medical gymnastics should be taught in the medical schools by giving the student the physical exercise he needs in the form of instruction in specialized gymnastics, such as programs for patients with heart disease, constipation, scoliosis, etc. Electrotherapy, as well as hydrotherapy, should be in the hands of every medical practitioner to accomplish the most good for the people. Our ignorance of dietetics is the laughing stock of the world. It is high time to remove this stigma from the medical profession.

In all probability nothing will be done. Years will pass before a change will come, because the leaders of the medical profession are not conversant with these measures of treatment. If they know little or nothing about these measures, how can they be expected to provide adequately for them? The very provision they have made for them in the standard curriculum—sixteen hours—shows how little they know about these various measures. It is not desirable to wait for a fifth year to be added to the curriculum before these subjects be taught adequately. If necessary, the time given to anatomy might be cut down somewhat to give the students a better training in these subjects.

DR. E. L. EGGLESTON, Battle Creek, Mich.: I trust you will not consider that I am bringing this subject before you in a critical way. It may be that the leaders in medical education have done the best they knew how to remedy the situation; nevertheless, I feel that it is high time there was a change. I am in institutional work, and too many of the patients coming to me have for their medical advisers irregular practitioners. One of the reasons for this is the slight attention given to physical therapeutics, and I trust the day will soon come when there will be more attention given to this particular work. I appreciate the criticism which has been directed toward those using these measures empirically. Their value depends on their being used with the same degree of precision found necessary for the advantageous employment of the medicinal therapeutic agents.

Transmission of Disease by Insects.—Centuries ago there was suggested the possibility that insects were concerned with the spread of disease, and from time to time there have appeared keen suggestions and logical hypotheses along this line that lead us to marvel that the establishment of the truths should have been so long delayed. One of the earliest of these references is by the Italian physician, Mercurialis, who lived from 1530 to 1607, during a period when Europe was being ravaged by the dread "black death," or plague. Concerning its transmission he wrote: "There can be no doubt that flies feed on the internal secretions of the diseased and dying, then, flying away, they deposit their excretions on the food in neighboring dwellings, and persons who eat of it are thus infected."—Riley and Johannsen, *Handbook of Medical Entomology*.